

EV-Smart Grid Research & Interoperability Activities

2014 DOE Hydrogen Program and Vehicle Technologies
Annual Merit Review

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Poster Session

Project ID #VSS053

Accomplishments ... Tools/Technology

Test procedures and tools

- SAE J2953 compatibility/interoperability
- SAE J1772 connector force measurement
- SAE J2954 wireless charging test fixture







Charging communication controllers

PEV/EVSE communication and emulation





Accomplishments ... Interoperability Center 200kW/480VAC Power Integrated grid simulation, real-time grid data, and configurable branch circuit for smart charging and energy management studies Electromagnetic isolation chamber w/ wireless charging test fixture EV-Smart Grid Interoperability Center Interoperability

150kW+ PEV/EVSE emulator

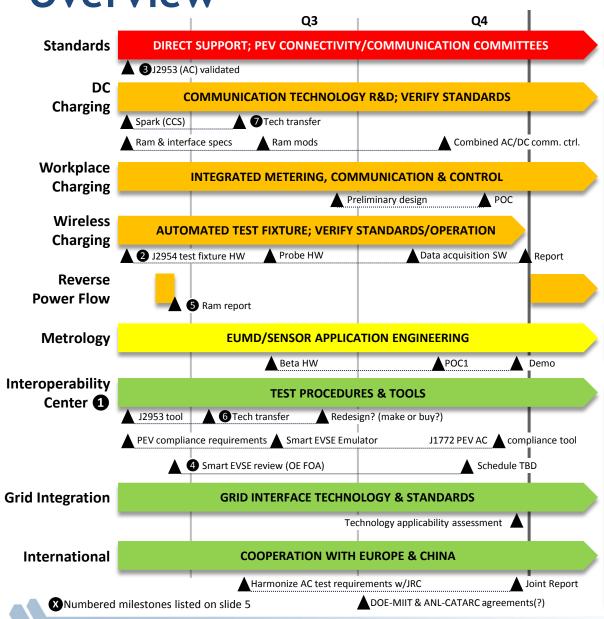
AC and DC EV
Supply Equipment

Wireless test fixture

Embedded controls lab

test tools

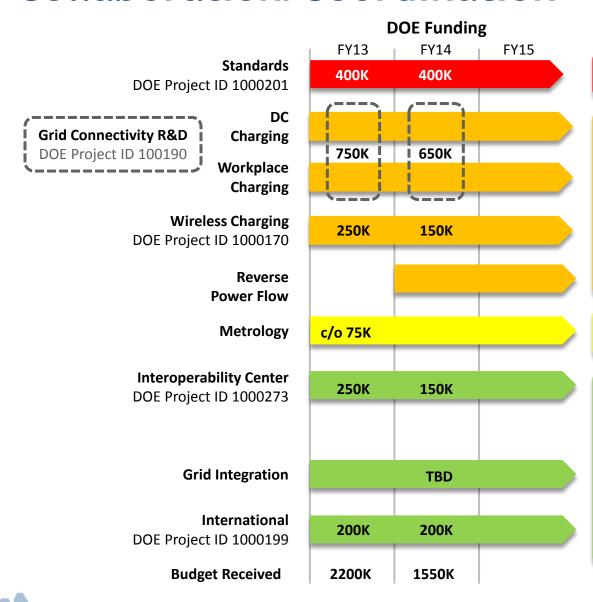
Overview



FY 2015

- DC interoperability focus
- SAE, IEC, UL, etc.
- DC compliance/interoperability test procedures and tools
- System integration/verification
- SW development
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- Tech transfer
- Focus on off-board inverter
- SW development/HW integration
- Tech transfer
- PEV J1772 compliance testing
- DC interoperability testing
- · Magnetic interoperability testing
- Tech transfer
- Design studies/prototypes
- System integration with NREL
- Harmonize procedures and tools
- Initiate joint testing
- Establish common industry board
- Joint work plan with CATARC (TBD)

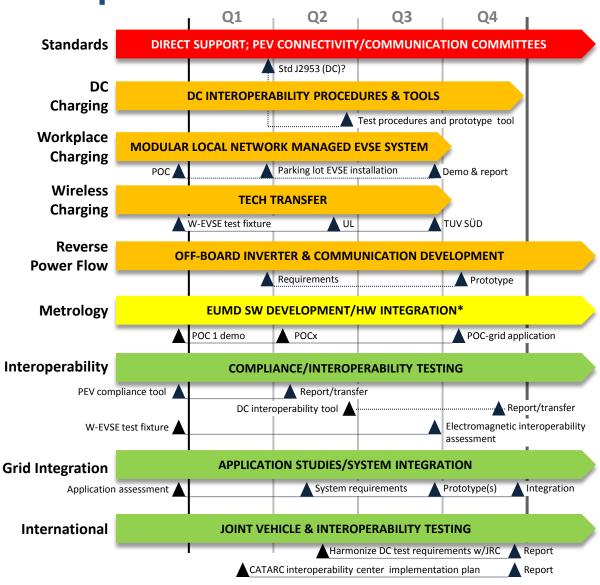
Collaboration/Coordination



Partners/Collaborators

- OEMs, suppliers and SDOs; SAE, IEC, NIST, DIN, UL
- GM, Chrysler, 2G Engineering, BTC, Aerovironment, DC EVSE OEMs
- SCE, DTE, SMUD, Duke, NE Utilities, Phoenix Contact
- SAE J2954 testing committee, UL, 2G Engineering, PEV/W-EVSE OEMs
- Chrysler, utilities
- DOE Grid Integration, NIST, utilities, BTC, Aerovironment, DC EVSE OEMs
- EC JRC-IET, global OEMs & suppliers
- Intertek, instrument suppliers
- Global industry advisory board (TBD)
- CATARC (TBD)
- INL, NREL, LBNL, PNNL
- EC (DG Res, Trade, MOVE)
- USG DOE IA, DOS, DOC USTR

Proposed Future Work



FY 2015 Objectives

- Consistent and harmonized AC & DC charging standards
- Transfer DC interoperability testing capability
- Verify network/energy management communication standards
- Standard W-EVSE testing capability at certification organizations
- Verify V2x standards for AC/DC
- Tech transfer
- Shift toward grid applications
- PEV J1772 compliance test capability
- AC/DC interoperability test capability
- W-EVSE field characterization and interoperability test capability
- System integration & demo at Argonne and NREL
- Harmonized procedures and tools
- Joint test reports
- Common global industry board
- Interoperability center at CATARC